

# Opportunities for Co-Firing Electric Power Generation from Wood or Grassy Plants

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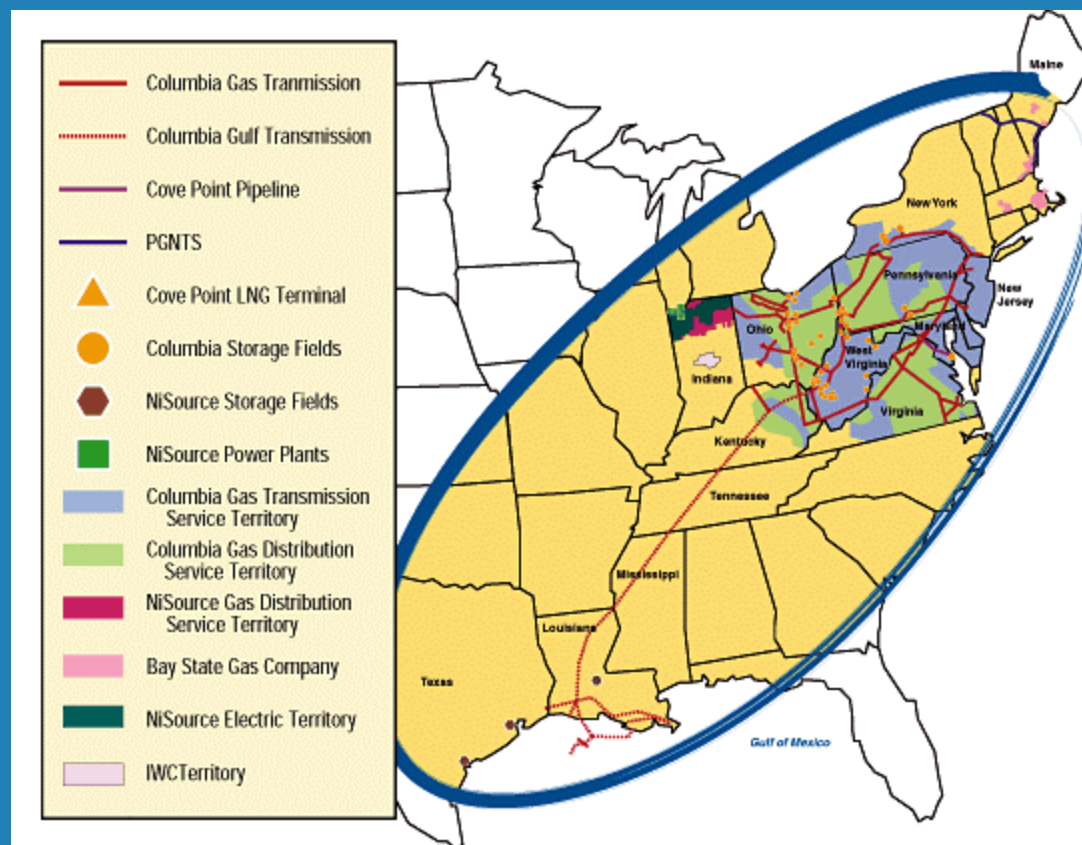
USDA Agricultural Outlook Forum 2001

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Arlington, Virginia



*Delivering life's essential resources*





# Commitment to the Environment

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- Natural Gas
- Energy Efficiency
- Combined Heat and Power Projects
- Distributed Generation
- Renewables
- Economic Sustainability



# Why Biomass Co-Firing

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- Green Power - Customers or Wholesale
- Renewable & Alternate Fuel Source
- Customer Retention
- Allows us to use existing facilities
- Electric Restructuring CO<sub>2</sub> Mitigation



# Biomass Progress to Date

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## • 1997

- Study to assess potential of growing Willow on our ROWs
- 4-day Co-firing test at 460 MW Michigan City Generating Station

## • 1998

- Engineering and design of tri-firing tests at Bailly Generating Station



# Biomass Progress to Date

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## • 1999

- 3-30 day tests using biomass, petroleum coke and coal
- Biomass gasification technology assessment

## • 2000

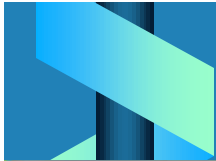
- Biomass fuel assessment of Northern Indiana

















# Opportunities

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## • Co-firing with Coal in Existing Facilities

- Waste Wood & Opportunity Fuels
- Green Wood
- Agricultural Residues - Stover, old seed corn

## • Biomass Gasification w/ Nat'l Gas CTs

- Agricultural Residues
- Dedicated Energy Crops
- Energy Residues

# Comparison

	HHV (BTUs/cu. ft.)	Cost (\$/mmBtu)
Biomass	90,000 - 10,000	\$0.90 – \$5.00
Coal	500,000 – 600,000	\$0.90 – \$1.50
Nat'l Gas		\$3.50 - \$10.00+



# Issues

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- Public outreach and awareness
- Incentives to encourage co-firing
- Regulatory Relief
- Biomass for electric generation should not compete with Ethanol or Chemicals
- Material Handling
- Availability

